Specification Amendments

Please amend the specification as indicated.

Please replace the paragraph beginning on page 6, line 5 of the specification with the following:

Figure 1 is a simplified block diagram of a portion of an ion implantation system 100 incorporating the dose error control method according to at least one embodiment of the present invention. The ion implantation system 100 includes an ion source (beam generator) 5 which generates and directs an ion beam 10 toward a target 30, such as a semiconductor wafer, mounted on a support platen 35, and a Faraday 20. Faraday cup 20 is used as the primary dosing reference and is typically located in an enclosure 9 (outside of target chamber 12), where charge exchange is minimal. Faraday cup 20 accepts ions when the beam 10 is in the over-scan region. The over-scan region is that region where the beam 10 is not impinging directly upon a target 30, but rather to either side of a target 30 during implantation. The beam 10 is generally transported from the ion source 5 to the target 30 in a relatively high vacuum environment produced in an enclosure 9 and target ~~chamber12~~ <u>chamber 12</u> by a vacuum system 15. The vacuum in the enclosure 9 and target ~~chamber12~~ <u>chamber 12</u> is maintained using well-known systems such as vacuum pumps, vacuum isolation valves, pressure sensors, and the like. The vacuum system 15 may generally have a physical connection with which to communicate with the control software 40 to supply information about the vacuum level in various sections of enclosure 9 or target chamber 12.

Please replace the paragraph beginning on page 9, line 5 of the specification with the following:

Figure 2 is a block diagram of the dose processor and control software module as used by ion implantation system 100 shown in Figure 1. The control software/dose processor 40, in the various embodiments disclosed herein, could be configured to use the ratio drift data to update the accumulated dose in the Faraday cup 20 and thus compensate for the dose error due to charge neutralization. As before, when

detector 25 and Faraday 20 are used under normal operating conditions (high and stable vacuum, no wafer being implanted) to establish a reference ratio, this reference value would be stored by the control software/dose processor 40. A detected dose ~~module45~~ module 45 can be used to compare the reference ratio obtained from control software/dose processor 40 to subsequent ratios obtained during ion implantation of a semiconductor wafer. When a difference exists between the implantation ratio and the reference ratio, due to charge neutralization caused by outgassing from a wafer during implantation, detected dose module 45 would send a signal to the control software/dose processor 40, which can be used to send control signals to the vacuum system 15, ion source 5, and other systems as are known to those of skill in the art. The detected dose module 45, through the control software/dose processor 40, can be used to effectively compensate for the dose error due to ion beam neutralization, while an implantation process is taking place (in real time). Thus, detector 25 can be used to determine the total dose even though detector 25 does not detect the presence of the uncharged particles. It should be noted that although detected dose module 45 is shown as being an internal module within control software/dose processor 40, it may be implemented as an add-on, exterior module to control software/dose processor 40 in other embodiments.